

# **MODIS SCIENCE DATA SUPPORT TEAM PRESENTATION**

**July 31, 1992**

## **AGENDA**

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**ACTION ITEMS:**

04/24/92 [Lloyd Carpenter & Team] Develop a staffing plan for the accomplishment of the tasks shown on the schedule. (A updated draft of the staffing plan has been developed.) STATUS: Open. Due Date: 06/12/92

06/12/92 [Tom Goff] Develop separate detailed schedules using Microsoft Project for Level-1A and -1B software design and development. (Updated schedules were presented at the meeting on 07/24/92.) STATUS: Open. Due Date: 07/10/92

## MODIS Airborne Simulator (MAS) Status

*Liam E. Gumley*

*Progress up to 30 July 1992*

### *(1) MAS FIRE data processing*

MAS data from the 14-NOV-1991 FIRE flight has been loaded onto ltpindigo via Exabyte 8500 tape for production processing. The MAS/INS clock offset took some time to determine since the MAS data was non-continuous i.e. the recorder was cycled during flight by the pilot. Approximately 800 seconds of MAS and INS data near the end of the data recording period were selected for cross correlation matching. The INS data (recorded every 5 seconds) was interpolated to the MAS sampling rate (6.25 scans/second) using a cubic spline. This enables the best possible match between the MAS and INS roll data. Visual inspection of the MAS and INS data plotted on top of each other showed that the offset was around 60 seconds (INS-MAS). The cross correlation data confirmed that the maximum correlation between the two time sequences was at an offset of 59.68 seconds (to the nearest scanline).

Tom Arnold delivered an updated set of visible calibration coefficients on 07/28. This coefficient set did include visible/near-IR calibration adjustments during flight based on instrument temperature. The equations are of the form

$$\text{Count}_{\text{new}} = \text{Count}_{\text{old}} + a * (-23.0 - T_{\text{bb1}}) + b$$

where a and b are coefficients determined from laboratory observations of sensitivity changes with temperature, and  $T_{\text{bb1}}$  is the temperature of the MAS ambient blackbody. This line-by-line adjustment of the visible calibration is of concern since it means an additional piece of information must be included in the output dataset if the original instrument counts are to be recoverable. At present it is planned to handle this by including the coefficients and equation form in the instrument configuration file, which is included in every output NetCDF data file.

During checking of the supplied visible/near-IR calibration data it was discovered that some of the instrument configuration information used was incorrect. This led to a search for the definitive instrument configuration information, which was finally obtained from Mike King. This information was contained in a memo to Ken Brown from Daedalus. However the spectral response information did not match an earlier Daedalus memo showing the shape of 5 of the MAS spectral channels during FIRE. Ken Brown and Daedalus have been contacted regarding this problem, and it is expected to be resolved next week. Fred Osterwisch at Daedalus confirmed that only 5 of the 11 MAS spectral channels were characterized before FIRE due to time constraints. The digital data for these spectral responses will be forwarded to me. It will be necessary to assume spectral response shapes for the remaining IR spectral channels. Spectral response information is required for IR channel calibration, but not for visible/near-IR calibration.

# DRAFT

## The Log of the MODIS Level-2 Processing Shell Design

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Date: July 27 - July 31, 1992

### 1. Algorithm Dependency Diagram

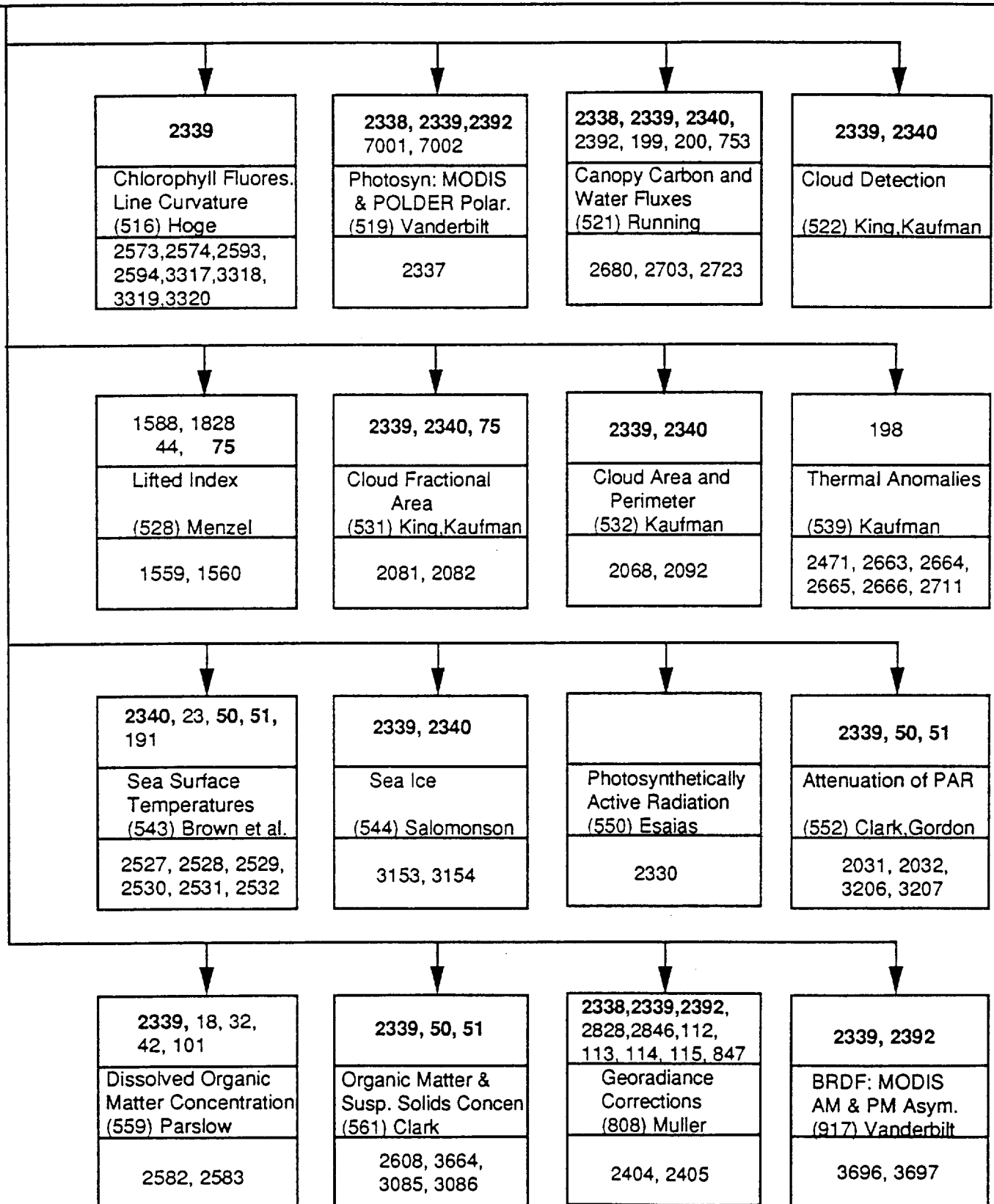
- (1) The part 4 of the algorithm dependency diagram is attached. Currently there are 16 independent algorithms, i.e., they can run simultaneously in the shell.
- (2) Phil Ardanuy and I reviewed the diagram and Phil indicated at least 10 questions on the data flow and algorithm dependency. I am summarizing these questions and will discuss these problems with Team Leader when the detailed input data description is available (which will be provided by SPSO soon).
- (3) Currently the diagram emphasizes the algorithm dependency only which is determined by the relationship of input and output data of each algorithm.

### 2. Shell Design and Development

Liam Gumley introduced the CFORTRAN, which is available on iris2:[zebra.desy.de], to me. CFORTRAN is a tool, developed by B. Burow, Univ. of Toronto, for the interface between C and FORTRAN. It provides a completely transparent, machine independent interface between main program, subroutines, functions, and global data (i.e., structures and COMMON blocks). Based on the documentation, C programmers need not embed FORTRAN argument passing mechanisms into their code! I am studying its functions and capabilities.

# DRAFT

## Algorithm Dependency in MODIS Level-2 Processing (Part 4)



Questions: (Part 1 and Part 2)

1. Will the atmospheric correction in ocean applications do once?
  - the 6 products
  - incident PAR
  - Abbott's products
2. The role of Tanre in ocean (Algo. 558) -- if any?
  - Are they 2 different products, one for land and one for ocean?
3. The role of glint?
  - required for Algo. 545, but not Algo. 558.
4. Is Algo. 546 required for Algo. 916?
  - Database says NO?
5. Data #23 vs Data #1333
  - both are O3, #23 is from TOMS or Nimbus-7
  - it implies the dependency.

Questions: (Part 3)

1. Algo. 540 -----> Algo. 536 (Data #2015, #2018)
  - not a daily path, more likely an albedo "climatology"
  - that might be implemented in an advanced version of ID:536
  - (say 2 years after launch).
2. Recursion for Algo. 520
3. Are Algo. 524, 525, 526 always produced as a part of Algo. 560?
  - Sometime? or are these totally separate?
4. Is Algo. 537 (Vegetation and Soil Indices) required for Algo. 540 (Spectral Surface Reflectance)?
5. Algo. 515 and Algo. 557 should belong to the ocean part.

## **MODIS Level-1 Software Design Status**

**Thomas E. Goff**

**30 July, 1992**

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### **-- Miscellaneous Status--**

- **PC-UNIX** - The second release of 386BSD UNIX for Intel architectures is now available. This is a full Berkeley 4.3 release in development form. I have some limited information available for interested parties.
- **Replace program enhancements** - A wild card facility was added to the replace program to allow the conversion of UNIX man and more page output to be captured by my PC and printed with character enhancements (bold, italics) on the HP LaserJet.
- **Finalization of the MODIS sample C programs.** - Both the fdump and replace programs have been updated to their final form using ANSI C guidelines and have been compiled on the SGI, Sun, and PC platforms. These programs are written in ANSI C and will not compile on the VAX.
- **ANSI C on the Sun** - The gnu C compiler was installed on the Cheshire Sun and exercised. The native Sun C compiler is not ANSI compliant.
- **Configuration Management** - Information on configuration management facilities is being collected. I currently have information on SCCS, RCS, and PCRS.

### **- Futures -**

- SLIP is still being investigated. I have additional names which I am trying to reach.
- The requirements document for the MODIS Level-0 Packet Simulator is being written.